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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/699,024	10/31/2003	Jagir Razak Jainul Abdeen Hussan	JP920030152US1	2138

39903 7590 12/12/2007	EXAMINER
IBM ENDICOTT (ANTHONY ENGLAND) LAW OFFICE OF ANTHONY ENGLAND PO Box 5307 AUSTIN, TX 78763-5307	WHALEY, PABLO S

ART UNIT	PAPER NUMBER
1631	

MAIL DATE	DELIVERY MODE
12/12/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

> A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
> - Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
> - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
> - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
> Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *17 September 2007*.

2a) ☐ This action is **FINAL**.   2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-13* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1-13* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on *31 October 2003 and 31 July 2006* is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All   b) ☐ Some * c) ☐ None of:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____.

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Applicant's Election

Applicant's election with traverse of Group I drawn to claims 1-11 filed 09/17/2007, is acknowledged. Applicants' traversal of the Restriction Requirement on the grounds that claims 1, 12, and 13 do not encompass independent inventions based on applicant's amendment filed 09/17/2007 are persuasive. The Restriction Requirement is withdrawn.

Claims Under Examination

Claims 1-13 are under examination.

Priority

Priority to US filing date of 10/31/2003 has been acknowledged.

Claim rejections - 35 USC § 112, 2nd Paragraph

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims that depend directly or indirectly from claim 1 are also rejected due to said dependence.

Claims 1 (line 10), 12, and 13 recite "generating a backbonedata sequence" It is unclear what limitation is intended by the term "backbone" in this context. As a result, the metes and bounds of "backbone data sequence " are unclear.

Claim 2 recites "associating ones of the replets with subsequences of the data sequence" It is unclear whether one replet is associated with multiple subsequences or whether one subsequence is associated with one replet. unclear.

Claim 4 and 5 recite "meta-replets." It is unclear as to the intended meaning of this term.

Claims 3 and 6 recite the phrase "using indirection." It is unclear as to the intended meaning of the term "indirection" in the given context. For purposes of examination, the Examiner has interpreted this term as indirection functions for constructing sequential events and storing the data.

Claim rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-13 are rejected under 35 U.S.C. 101 because these claims are drawn to non-statutory subject matter. These claims are rejected for the following reasons.

Claims 1-11 are drawn to a method for presenting sequence data. Claims 12 and 13 are drawn to a computer program product and system for presenting sequence data. Therefore, the Examiner must first determine if the claimed process is statutory, and then determine if the claimed product and system include a useful, concrete, and tangible result.

For a claimed process to be statutory, it must provide: (1) a practical application by physical transformation (i.e. reduction of an article to a different state or thing), or (2) a practical application that produces a concrete, tangible, and useful result [State Street Bank & Trust Co. v. Signature Financial Group Inc. CAFC 47 USPQ2d 1596 (1998)], [AT&T Corp. v. Excel Communications Inc. (CAFC 50 USPQ2d 1447 (1999)]. As noted in State Street Bank & Trust Co. v. Signature Financial Group Inc. CAFC 47 USPQ2d 1596 (1998), the statutory category of the claimed subject matter is not relevant to a determination of whether the claimed subject matter produces a useful, concrete, and tangible result. The question of whether a claim encompasses statutory subject matter should not focus on which of the four categories of subject matter a claim is directed to a process, machine, manufacture, or composition of matter--but rather on the essential characteristics of the subject matter, in particular, its practical utility. Therefore machines that execute a process which does not include a useful, concrete, and tangible result also non-statutory.

In the instant case, the claimed process does not result in a physical transformation of matter. Where a claimed method does not result in a physical transformation of matter, it may be statutory where it recites a result that is concrete (i.e. reproducible), tangible (i.e. communicated to a user), and useful result (i.e. a specific and substantial). The claimed process results in presenting sequence data as the backbone data sequence in combination with the position-match entries. This is not a tangible result because "presenting" data may occur inside of a computer. Therefore the claimed method does not recite a practical application of a 35 U.S.C. 101 Judicial exception and is not statutory. As the claimed product and system execute the non-statutory process set forth above, the claimed product and system also do not communicate a real-world (i.e. tangible) result because "presenting" data may occur inside of a

computer. Therefore the claimed product and system do not recite a practical application of a 35

U.S.C. 101 Judicial exception and are not statutory.

This rejection could be overcome by amendment of the claims to recite that a result of

the process is outputted to a display, or to a user, or in a graphical format, or in a user readable

format, or by including a result that is a physical transformation. The applicants are cautioned

against introduction of new matter in an amendment. For an updated discussion of statutory

considerations with regard to non-functional descriptive material and computer-related

inventions, see the Guidelines for Patent Eligible Subject Matter in the MPEP 2106, Section IV.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Taylor et al.

(Computer and Chemistry, 1999, Vol. 23, p.365-385), in view of Kalantery (US 5,832,272;

Issued: Nov. 3, 1998).

The instantly claimed invention is drawn to a method, program, and system for identifying replets for sequence data, storing at least one position-match entry that records a respective at least one data position of the replet within the sequence data, generating a backbone data sequence, and presenting the sequence data as the backbone data sequence in combination with the position-match entries. The specification defines replets as patterns used to represent sequence [p.7]. The specification defines match-sets as positional information of the replete in a sequence [p.7].

Taylor et al. teaches iterated sequence search methods for presenting sequence data. In particular, Taylor shows a search and align algorithm [Fig. 3], wherein patterns in sequence data are identified in databank sequences via alignment and represented using codes [Table 1], which equates to replets. Taylor shows amino acid match-set data [Fig. 4] representing position-match records of sequence data. The algorithm includes a filter to remove similarities in data and peptide [Fig. 3]. Taylor shows generating and plotting hemoglobin sequence data in the form of the sequence codes and match-set data [Fig. 5], wherein the sequence data has been reduced by the removal of pairs of homologues with more than 70% identity [Fig. 5, Discussion]. The Examiner has broadly interpreted this as a teaching for generating backbone data wherein a computer system has removed replets. Taylor also shows associating data representing sequence data using trees [See Fig. 1 and Fig. 2], wherein the tree distinguishes groupings of sub-sets of data (i.e. data variation portions). Taylor uses the psi-BLAST algorithm for assembly of multiple ordered segments and construction of sequence profiles to be used as new probe in repeated cycles of the entire process [p.378, Col. 1, ¶1].

Taylor does not specifically teach "generating a backbone data sequence", as in claims 1, 12, and 13. Taylor does not specifically teach using "indirection", as in claims 3 and 6.

Kalantery teaches a method and apparatus for searching databases based on parallel-processing [Col. 1, lines 1-20], with particular applications in searching large databases such as in the human genome project. Kalantery shows the use of indirection functions [Col. 10, lines 33-40], and shows a "skeleton" structure (i.e. backbone structure) comprising indirection functions for constructing sequential events and storing the data in a particular memory location [Col. 11, lines 45-65] and [Fig. 10]. Furthermore, the skeleton structure allows for the removal of repetitive data in the process of writing data to memory [Col. 12, lines 1-10].

Therefore, it would have been obvious to someone of ordinary skill in the art at the time of the instant invention to practice the method of Taylor with the modification of a parallel-processing search algorithm, as taught by Kalantery, since Taylor suggests the importance of using search algorithms that reduce user wait [p.384, Col. 1] and since, resulting in the instantly claimed invention with predictable results. One of ordinary skill in the art would have been motivated to modify the teachings of Taylor using the method of Kalantery in order to improve the searching of large sequence databases using parallel-processing, as suggested by Kalantery[Col. 1, lines 1-20].

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pablo Whaley whose telephone number is (571)272-4425. The examiner can normally be reached on 9:30am - 6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marjorie Moran can be reached at 571-272-0720. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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